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AUTHOR Brandt, David A.; Kline, Kay H.
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ABSTRACT

The well-known study on fear of success (FOS) by Horner (1968) asserted that women low in FOS do better on achievement-oriented tasks under competitive conditions, while women high in the motive do better when the situation is non-competitive. This paper critically reviews the methodology of this study and concludes that the statistical test purporting to demonstrate the above relationship does not address the hypothesis. An alternate analysis, which does examine the hypothesis, is carried out on the raw data of this study. This analysis shows that high FOS women in this sample actually did significantly better than low FOS women under all conditions. This is directly opposite to the widely held interpretation of the study. It is suggested that researchers examine the methodology of studies carefully before accepting other workers' conclusions. (Author)

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A Complete Reanalysis of Horner's Classic "Fear of Success" Study

David A. Brandt
University of Chicago

Kay H. Kline
Department of Psychiatry (Medical Center)
University of Missouri - Columbia

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Since Horner's dissertation study on fear of success (1968), researchers have nad difficulty supporting and extending her conclusion that FOS is a "psychological barrier to achievement in women" (Horner, 1973). The recent reviews of Condry and Dyer (1976) and Zuckerman and Wheeler (1975) suggested that the original measure of FOS has low reliability and is not consistently related to achievement variables. While not disagreeing with this position, this paper will show that the lack of support can be explained even more simply: there is actually no support for these claims in the dissertation study itself. In this paper I will show that the original data, when appropriately analyzed, actually would suggest that high FOS in women is associated with improved performance. It is argued that the statistical test in the dissertation purporting to examine the relationship between FOS and performance does not address the hypothesis. Before I critique the study I will first describe it and then present a complete reanalysis of the data using the raw scores provided in the dissertation.

The Dissertation Study

The Hypothesis

It is not generally known that all the analyses of FOS in the dissertation were done post hoc. The study was apparently designed to examine performance as a function of experimental condition (competitive vs. noncompetitive), need for achievement, and need for affiliation. The comparison involving FOS was done post hoc and only after Horner had renamed one of the testing

sessions. It was this renaming that rendered the test of FOS irrelevant to the hypothesis. To understand exactly what happened, it is necessary to describe the study in detail.

The Design

Introductory psychology students (N=178; 88 men, 90 women) were each tested twice on separate occasions. Figure I

Insert Figure I about here

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gives a schematic of the experimental plan. On the first occasion they were tested as a large group and given a battery of motivation and achievement tests. On the second occasion the students were tested individually or in pairs in one of the experimental conditions.

At Occasion 1, roughly equal numbers of men and women were assessed in one of two large testing sessions. This will be referred to as the Group Testing session. Measures of need achievement and need affiliation were obtained by scoring responses to the first four of six TAT verbal leads according to Atkinson's (1958) scoring systems. Responses to the sixth lead ("After first term finals, Anne finds herself at the top of the medical school class.") were later coded for FOS using a present-absent scoring system devised by Horner. The Achievement Anxiety Test (AAT) of Alpert and Haber (1960) and the Lowell Scrambled Words Test (Lowell, 1952) were also administered.

For Occasion 2, each student was randomly assigned to one of three achievement-oriented conditions. The conditions were: Non-competitive (NC), Mixed-sex competitive (MS), and Same-sex

competitive (SS). Persons in the NC condition were tested individually and told "After you have worked on the tasks selected, you will be told how well you did." (p. 46) In the competitive conditions persons were tested in pairs and told "After you have worked on these tasks, you will be told which one of you did best and how much better." (p. 49). The measures of performance were: Number of words constructed in ten minutes from the word "generation" (anagrams) and the number of two-step arithmetic problems worked in five minutes (arithmetic).

Hypothesis Testing

The data were analyzed by separate three-way (N ach x N aff x Condition) analyses of variance for each dependent variable and sex. For females, no effects were found for either dependent variable.

Introduction of the Concept of FOS

After no effects were found for the women students, the responses to the sixth TAT cue (Anne in med school) were scored for FOS and some findings presented. The hypothesis now under consideration asserted that high FOS women perform better in noncompetitive rather than competitive conditions, while the opposite pattern is true of low FOS women. Once the students had been classified on the new motive measure, it would seem natural to test the hypothesis by comparing performance of low and high FOS students in the three experimental conditions. But this was

not done because it was now believed necessary to control for individual differences in ability with a within-subjects design. But since the study was not planned with this in mind, some ad hoc thinking was necessary. Since each woman was measured twice, once in the Group Testing session and once in one of the three experimental conditions, so the possibility of a within-subjects comparison existed. But to carry out such a test, it would be necessary to assume that the Group Testing session was either a competitive or noncompetitive condition.

It was decided that the Group Testing session could be treated as another "mixed sex competitive condition" based on the following reasoning:

Horner found that the correlation between scrambled words (done in the Group Testing session) and anagrams was highest among women in the mixed-sex Competitive condition. Arguing that this showed that the Group Testing session was "most like" (p. 112) the actual mixed-sex competitive condition, she used it as a substitute for the experimentally defined condition. This made it possible to say that the women in the noncompetitive condition had also been tested under mixed-sex competitive conditions. She then compared their performance on anagrams (NC) and scrambled words (Group Testing = mixed-sex competitive) and gave the contingency table shown in Table I. A higher proportion of the high FOS

Insert Table I about here

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women did better in the NC condition (anagrams), while a higher

proportion of the low FOS women did better in the Group Testing/ mixed-sex competitive condition (scrambled words).

Methodological Criticisms

The use of the Group Testing session as a proxy for an actual mixed-sex competitive condition is not justified on either theoretical or empirical grounds.

First, there are no a priori or theoretical grounds for this assumption. The instructions and procedures used in the Group Testing session in no way implied any form of competition, much less between the sexes. Instead, the instructions indicated that the experimenter was only interested in getting normative data on the abilities of the students.

Second, there is no empirical evidence that performance in the Group Testing session is more similar to that in the MS condition. For example, the correlations between scrambled words and anagrams for the three conditions are not significantly different from each other, so the observed differences must be regarded as a chance result. Correlations for the three groups are: NC=.61, MS=.69, and SS=.50. The standard error of these correlations is .19, so tests of differences do not even approach significance.

Since there are no grounds for assuming that the Group Testing session is a mixed-sex competitive condition, the test given by Horner, while valid in the mathematical sense, does not address the hypothesis. It also has the serious problem of confounding outcome measure with type of condition.

An Alternate Analysis of FOS

Although the dissertation does not report a valid test of the hypothesis, it is possible to carry out such a test using a two-way (FOS x Condition) analysis of variance. To test the same hypothesis after controlling for individual differences, an analysis of covariance using the scrambled words and achievement motive measures can be computed. The covariance analysis controls for individual differences while exploiting the experimental design fully. Both analyses are presented below.

The Reanalysis

Both anagrams and arithmetic were used as dependent variables in multivariate analyses of variance and covariance. Only the anagrams variable showed any significant effects. Table 2 gives the means on anagrams as a function of FOS and condition. As can be seen, high FOS women did better than low

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Insert Table 2 about here

FOS women under all three conditions. The main effect for FOS is significant at the .002 level; when the covariates are included in the analysis, the performance difference in favor of high FOS women is less strong but clearly significant ($p < .01$).

Thus, these data unambiguously show that the women classified as high FOS did better on anagrams than those classified as low FOS.

Discussion

These trends in the data certainly help explain why researchers have had so much difficulty supporting the claim that FOS is associated with a performance decrement in women. In fact, a few

workers, such as Romer (1975) and Sorrintino and Short (1974) have actually reported performance increments associated with FOS. However, on the whole the literature is very inconsistent. Zuckerman and Wheeler's view that the projective test is simply not an adequate measure of the construct is perhaps the most reasonable at this point. Psychologists have reason to be skeptical of a one-item projective test which is scored dichotomously according to a system which had never been investigated prior to testing an hypothesis. Subsequent work seems to bear out such skepticism.

As an alternative, several workers have constructed questionnaire measures of FOS which appear more promising. The 27-item test of Zuckerman and Allison (in press) is based on Horner's theory of FOS. It has been shown to differentiate the sexes, and a limited amount of construct validity has been demonstrated. The dimensionality of the test has not been evaluated, and it has seldom been used in empirical research.

The measure of FOS developed by Pappo (1972) is actually based on the Freudian theory of "success neurosis" and, as such, puts FOS into a clinical rather than motivational framework. Freud's theory deals mainly with the consequences of success on the mental health of the person rather than simply with the level of his or her performance in achievement settings. In a sense, the effects on level of performance are a by-product rather than a focal point of a "success neurosis".

Pappo hypothesizes that there are five global characteristics of the success neurosis: (a) self-doubt and negative self-evaluation; (b) preoccupation with evaluation; (c) a competitive orientation; (d) repudiation of competence; and (e) self-sabotage behaviors. The scale consists of 83 dichotomous items which reflect all five characteristics. Although the scale in its present form obviously has the problems of multidimensionality and acquiescence effects, it is based on a broader and very well thought out theoretical position which is suggestive of many interesting hypotheses. The dissertation study supported a number of predictions from the theory. Unfortunately, this questionnaire has also been very rarely used.

Some General Comments

The manner in which FOS has been researched over the last eight years illustrates that it is very important for workers to critically evaluate prior research before planning and executing their own studies. The reliability of the projective test was not systematically evaluated prior to its wide use as a measure of the construct. Even after the initial studies failed to support the original conclusions, workers did not go back to the dissertation and note its methodological problems. The result was that work in this area bogged down for reasons which had nothing to do with the potential value of the construct. In retrospect, it is clear that a slower and more careful approach would have speeded up progress in the area.

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FIGURE 1

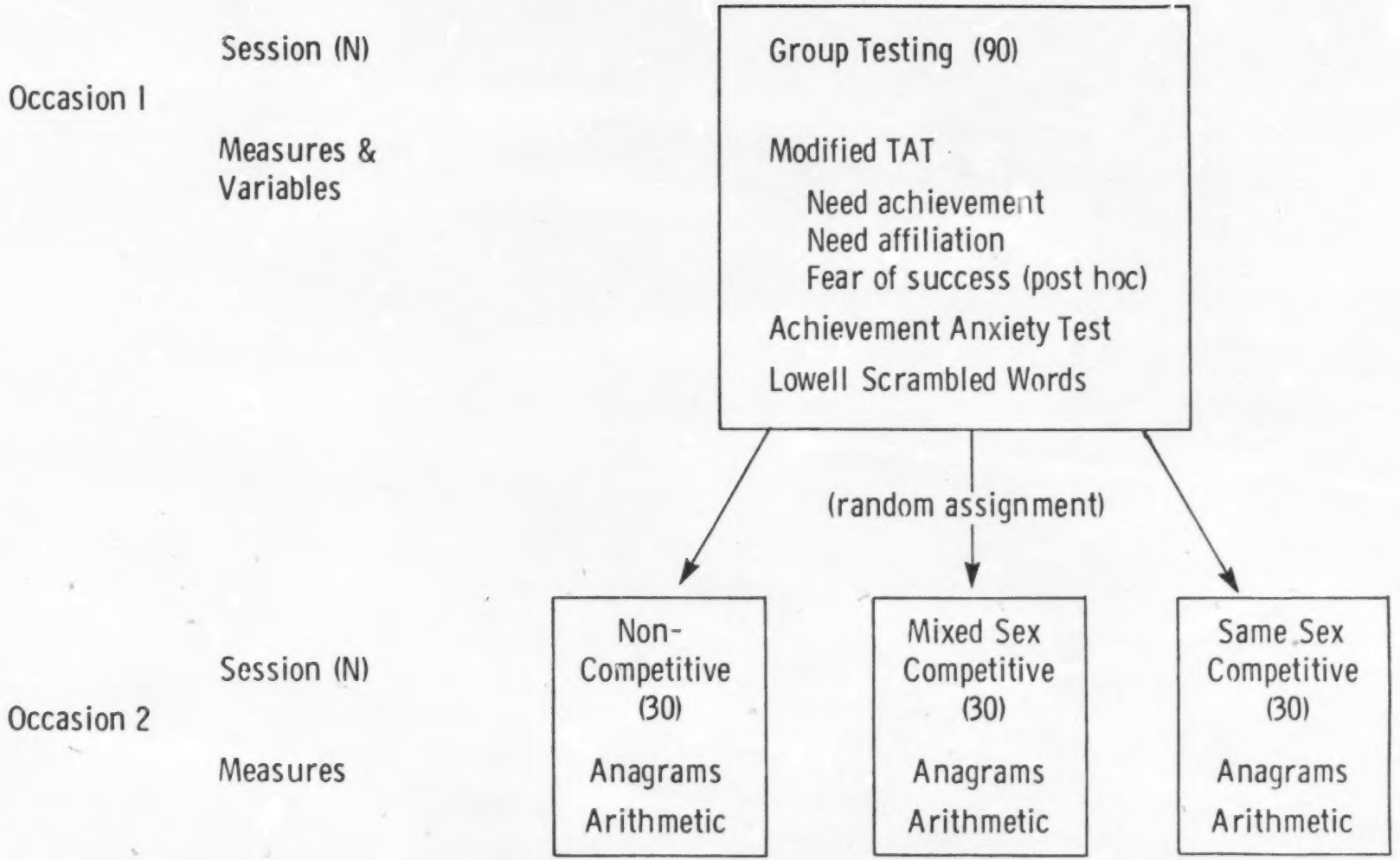
Session (N)
Occasion 1
Measures & Variables
Group Testing (90)
Modified TAT
Need achievement
Need affiliation
Fear of success (post hoc)
Achievement Anxiety Test
Lowell Scrambled Words
(random assignment)
Session (N)
Occasion 2
Measures
Non-Competitive (30)
Anagrams
Arithmetic
Mixed Sex Competitive (30)
Anagrams
Arithmetic
Same Sex Competitive (30)
Anagrams
Arithmetic

Table I

Relative Performance of Women in the Non-Competitive and Substitute Mixed Sex Competitive (Group Testing) Conditions

	Conditions	
FOS Level	Do Better in Non-Competitive Cond.	Do Better in Substitute MSC Cond.
High	13	4
Low	1	12

$\chi^2(1)=11.74$, $p < .005$

Note: This is Horner's Table 25 (p. 113).

Table 2

Cell Means on Anagrams as a Function of FOS and Condition

	Conditions				
FOS Level	Non-Competitive	Mixed Sex Competitive	Same Sex Competitive		
Low	44.53	47.45	48.80	46.74	$p < .002$
High	54.06	53.00	54.15	53.73	
	49.93	50.97	52.37		